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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/686,737 | 10/17/2003 | Seung-joon Yang | 1349.1265 | 8316 |

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STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

| EXAMINER | |
|---|---|
| HADIDI, JON | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2672 | |

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/686,737 | YANG, SEUNG-JOON | |
| | Examiner | Art Unit | |
| | Jon Hadidi | 2672 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *September 9, 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 17-25* is/are rejected.

7)☒ Claim(s) *15 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/9/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 7, 12-14 and 23-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6 recites the limitation "the number of occurrences by magnitudes of the stored motion vectors" at line 2. There is insufficient antecedent basis for this limitation in the claim, and the cited claim language is unclear and indefinite. Appropriate correction is required.

Claim 7 recites the limitation "the predetermined number of occurances" at line 4. There is insufficient antecedent basis for this limitation in the claim.

Claims 12 and 23 recite the limitation "SAD buffer" at line 3 in each claim. There is insufficient antecedent basis for this limitation in the claims.

Claims 13 and 24 recite the limitation "the number of occurrences by magnitudes of the stored motion vectors" at line 2 in each claim. There is insufficient antecedent basis for this limitation in the claims, and the cited claim language is unclear and indefinite. Appropriate correction is required.

Claims 13, 14, 24, and 25 recite the limitation "the predetermined number of occurrences" at line 4 in claims 13, 14, and 24, and at lines 3-4 with respect to claim 25. There is insufficient antecedent basis for this limitation in the claims.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 8-11, and 17-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ibenthal, U.S. Patent No. 5,153,719.

With regard to claim 1, Ibenthal describes a line-wise motion estimation unit (see Ibenthal, Fig 1, displacement vector checking means 21 and col. 8, generally lines 1-60, specifically lines 51-60) for calculating motion vectors indicating the extent of motions in a horizontal direction for individual lines of a predetermined search area with reference to a current field/frame and a reference field/frame (see Ibenthal, Fig. 2, and col. 11, line 50 to col. 12, line 57, wherein motion or displacement vectors on horizontal scanning line 5 of reference field A1 are diagrammatically marked by means of crosses in Fig. 2, and wherein said motion vectors indicate displacement vectors last determined in time that indicate horizontal displacement of scanning line 5, and from said motion vectors the candidate vector $K_{a1,5}$ is determined, which is used to determine post-filtered candidate vector $K_{nB2,2}$ in current field B2 of Fig. 2); a motion vector buffer (see Ibenthal,

Fig 1, line memory 9) for storing motion vectors for the individual lines (see Ibenthal, Fig. 2, and col. 11, line 50 to col. 12, line 57, wherein candidate vectors $K_{a1,5}$ $K_{b1,5}$ $K_{a2,5}$ store motion vectors for their respective individual lines); a scroll detection unit (see Ibenthal, Fig. 1, edge detector 15) for determining whether scroll motions exist in the current field/frame based on the motion vectors for the individual lines which are stored in the motion vector buffer (see Ibenthal, col. 2, lines 3-22, wherein motion or displacement vectors are generated which indicate the extent of the horizontal movement of an edge of a television signal and thus indicate by how many pixels the edge has moved in the same scanning line between two consecutive fields); and a scroll line detection unit (see Ibenthal, edge detector 15) for determining whether the scroll motions exist in the individual lines of the search area, based on a result of the determination of the scroll detection unit (see Ibenthal, col. 2, lines 3-22, wherein motion or displacement vectors are generated which indicate the extent of the horizontal movement of an edge of a television signal and thus indicate by how many pixels the edge has moved in the same scanning line between two consecutive fields).

With regard to claim 2, Ibenthal describes a pixel buffer (see Ibenthal, Fig. 1, line memory 9) for sequentially storing pixel data constructing lines to calculate the motion vectors in the reference field/frame (see Ibenthal, col. 2, lines 34-68); a FIFO buffer (see Ibenthal, Fig. 1, line memory 9) for sequentially storing pixel data constructing lines to calculate the motion vectors in the current field/frame (see Ibenthal, col. 2, lines 34-68); an SAD buffer (see Ibenthal, Fig. 1, summing number units 61 and 62) for calculating and storing summed absolute difference (SAD) values based on estimations of the

extent of motions, using the pixel data respectively stored in the pixel buffer and the FIFO buffer (see Ibenthal, col. 5, lines 3-27 and col. 5, line 61 to col. 6, line 3); and a motion vector estimator (see Ibenthal, Fig 1, displacement vector checking means 21) for calculating the motion vectors based on the SAD values stored in the SAD buffer (see Ibenthal, col. 5, lines 3-27 and col. 5, line 61 to col. 6, line 3).

With regard to claim 3, Ibenthal describes wherein the motion vector estimator calculates the motion vectors in correspondence to a motion estimation position having the minimum value of the SAD values stored in the SAD buffer (see Ibenthal, col. 5, lines 28-49).

With regard to claim 4, Ibenthal describes a motion detector (see Ibenthal, Fig. 1, arrangement 21) for determining the validity of the motion vectors calculated by the motion vector estimator (see Ibenthal, col. 5, lines 3-27 and col. 5, line 61 to col. 6, line 3); and an output selector (see Ibenthal, Fig. 1, arrangement 21) for selectively outputting only selected motion vectors based on a result of the validity decision of the motion detector (generally col. 8, lines 1-60, specifically col. 8, lines 58-60).

With regard to claim 5, Ibenthal describes wherein the motion estimator determines that the motion vectors are valid if a difference between the maximum value and the minimum value of the SAD values stored in the SAD buffer is larger than a predetermined threshold value (see Ibenthal, generally col. 8, lines 1-60, specifically lines 1-14).

With regard to claims 8 and 19, Ibenthal describes (a) calculating motion vectors indicating the extent of motions in a horizontal direction for individual lines of a

predetermined search area with reference to a current field/frame and a reference field/frame (see Ibenthal, Fig. 2, and col. 11, line 50 to col. 12, line 57, wherein motion or displacement vectors on horizontal scanning line 5 of reference field A1 are diagrammatically marked by means of crosses in Fig. 2, and wherein said motion vectors indicate displacement vectors last determined in time that indicate horizontal displacement of scanning line 5, and from said motion vectors the candidate vector $K_{a1,5}$ is determined, which is used to determine post-filtered candidate vector $K_{nB2,2}$ in current field B2 of Fig. 2); (b) storing motion vectors for the individual lines (see Ibenthal, Fig. 2, and col. 11, line 50 to col. 12, line 57, wherein candidate vectors $K_{a1,5}$ $K_{b1,5}$ $K_{a2,5}$ store motion vectors for their respective individual lines); (c) determining whether scroll motions exist in the current field/frame based on the stored motion vectors for the individual lines (see Ibenthal, col. 2, lines 3-22, wherein motion or displacement vectors are generated which indicate the extent of the horizontal movement of an edge of a television signal and thus indicate by how many pixels the edge has moved in the same scanning line between two consecutive fields) ; and (d) determining whether the scroll motions exist in the individual lines of the search area, based on a result of the determination of operation (c) (see Ibenthal, col. 2, lines 3-22, wherein motion or displacement vectors are generated which indicate the extent of the horizontal movement of an edge of a television signal and thus indicate by how many pixels the edge has moved in the same scanning line between two consecutive fields).

With regard to claims 9 and 20 Ibenthal describes wherein operation (a)

further comprises: (a1) sequentially storing pixel data constructing lines to calculate the motion vectors in the reference field/frame (see Ibenthal, col. 2, lines 34-68); (a2) sequentially storing pixel data to calculate the motion vectors in the current field/frame (see Ibenthal, col. 2, lines 34-68); (a3) calculating and storing summed absolute differences (SAD) values based on estimations of the extent of motions, using the pixel data respectively stored in the operations (a1) and (a2) (see Ibenthal, col. 5, lines 3-27 and col. 5, line 61 to col. 6, line 3); and (a4) calculating the motion vectors based on the stored SAD values (see Ibenthal, col. 5, lines 3-27 and col. 5, line 61 to col. 6, line 3).

With regard to claims 10 and 21, Ibenthal describes wherein the operation (a4) calculates the motion vectors in correspondence to a motion estimation position having the minimum value of the stored SAD values (see Ibenthal, col. 5, lines 28-49).

With regard to claims 11 and 22, Ibenthal describes determining the validity of the motion vectors calculated in the operation (a4) (see Ibenthal, col. 5, lines 3-27 and col. 5, line 61 to col. 6, line 3); and selectively outputting only valid motion vectors based on a result of the validity determination (generally col. 8, lines 1-60, specifically col. 8, lines 58-60).

With regard to claim 17, wherein, if the motion detector determines that a motion vector is invalid, the output selector outputs a constant to indicate invalidity (see Ibenthal, col. 11, lines 39-49, wherein a zero value indicates invalidity).

With regard to claim 18, Ibenthal describes if a motion vector is invalid, outputting a constant to indicate invalidity (see Ibenthal, generally col. 8, lines 1-60, specifically

col. 8, lines 58-60. wherein the enable signal to register 20 is the constant that indicates validity).

### *Allowable Subject Matter*

Claims 15 and 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With regard to claim 15, the claim language "a demultiplexer to store corresponding motion vectors at positions allocated in the motion vector buffer to respective lines based on inputted line number information", in combination with the claim limitations of its parent claim(s), contains allowable subject matter.

With regard to claim 16, the claim language "storing corresponding motion vectors at positions allocated to respective lines based on inputted line number information", in combination with the claim limitations of its parent claim(s), contains allowable subject matter.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon Hadidi whose telephone number is 575-272-7641. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 571-272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JH